State Compendium - Region 3

Programs and Regulatory Activities Related to Animal Feeding Operations

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Prepared For:
U.S. Environmental Protection Agency
Office of Wastewater Management
Water Permits Division
1200 Pennsylvania Avenue
Washington, DC 20460

Prepared by:
Tetra Tech, Inc.
10306 Eaton Place
Suite 340
Fairfax, VA 22030

CHAPTER 1. INTRODUCTION

This compendium has been developed to support the U.S. Environmental Protection Agency's (EPA) efforts to address the environmental and public health problems associated with animal feeding operations (AFOs) and concentrated animal feeding operations (CAFOs). The compendium is a compilation of AFO-related state program and state initiative information intended to illustrate how states are regulating AFOs, with a specific focus on the use of permits or similar mechanisms. This document is not intended as an evaluation of the effectiveness of individual state efforts.

Most of the State programmatic and regulatory information gathered and presented in this document pertains to controlling water quality impacts from AFOs. Although some states have designed regulatory standards to control non-water quality impacts (e.g., setback requirements for odor control), the vast majority of information presented is based on state efforts to address water quality and nutrient management issues.

The *Compendium* has been compiled from a number of publicly available information sources, including:

- Previously published research and existing surveys of State AFO and CAFO programs
- World Wide Web pages of state governments, agencies, and national agriculture organizations
- Select publicly accessible state statutes and regulations (generally accessed via the Web)
- National Pollutant Discharge Elimination System (NPDES) permits developed for CAFOs
- Summaries of State program information provided by EPA regional offices

Based on these sources of publicly available information, the *Compendium* represents a reasonable appraisal of how states are addressing AFO-related environmental problems. Nevertheless, the information presented here is subject to several important limits. First, in compiling this compendium no new formal survey of the states was conducted, nor was a comprehensive review of each state's regulations undertaken, as both were beyond the scope of this task. Thus, in some instances information presented here may be limited or minor gaps may exist. Second, state regulation of AFOs and CAFOs can be complex, involving both federal and state laws and regulations, often originating at the state level from several different agencies, with numerous variations in approaches, requirements, and jurisdiction among the different states. Consequently, different levels of information may be available among states and even between relevant agencies within a state. Finally, the various sources of publicly available information used were reviewed and compiled over a period of time during which many States were reexamining and revising their AFO regulations. As a result, this compendium is by necessity a working document that depicts reasonably current practices, but may in some instances be superceded by recent state programmatic and regulatory changes. The information presented here must be considered subject to these limits and specific regulatory requirements should be verified with state or EPA authorities as appropriate.

The *Compendium of State AFO Programs* consists of four chapters, including this introduction, and three Appendices. Chapter 2 of this document provides a national overview of State AFO initiatives based on the publicly available data. It attempts to summarize how states regulate

AFOs and highlights key aspects of State AFO programs.

Chapter 3 presents individual state profiles. Each profile includes available information addressing: background, lead regulatory agency, state regulations regarding AFO/CAFOs, types of permits, permit coverage, permit conditions, enforcement information, state voluntary programs, additional state-specific information, and references.

Finally, the *Compendium* contains three Appendices. Appendix A describe methods used to develop the *Compendium* and highlights the limits of the data collection efforts. Appendix B lists some of the more frequently used acronyms. Appendix C provides a glossary of useful terms associated with animal feedlots.

CHAPTER 2. NATIONAL SUMMARY OF STATE INITIATIVES

This chapter presents a national overview of state AFO regulatory programs and initiatives based on a review of publicly available data. The discussion begins with a brief review of the respective federal and state roles in administering the National Pollutant Discharge Elimination System (NPDES) program (Section 2.1), followed by a summary of the federal regulations addressing AFOs and CAFOs (Section 2.2). The remainder of this chapter summarizes State Programs/Initiatives (Section 2.3) and Recent State Initiatives/Trends (Section 2.4).

2.1 Overview of EPA/State Roles in NPDES Program

Under the Clean Water Act (CWA), NPDES permits may be issued by EPA or any state authorized by EPA to implement the NPDES program. Currently, 44 states are authorized to administer the base NPDES program.[1] (The base program includes the federal requirements applicable to AFOs and CAFOs, which are discussed below).[2] To become an authorized NPDES state, the requirements imposed under a State's NPDES program must at a minimum be as stringent as the requirements imposed under the federal NPDES program. The states, however, may impose requirements that are broader in scope or more stringent than the requirements imposed under the federal NPDES program. In states not authorized to implement the NPDES program, the appropriate EPA Regional office is responsible for implementing the NPDES program.

Regarding the regulation of AFOs, 44 of the states authorized to implement the NPDES program have some form of program requirements generally deemed to be as stringent as the federal requirements applicable to AFOs. Yet, it appears that only a handful of states rely solely on their State NPDES regulations to address CAFOs. Rather, most use their NPDES regulations as one part of their CAFO program and supplement these requirements with additional provisions.

Because the federal CAFO regulations constitute the core program requirements in many authorized states and are used for purposes of comparison and summary in this document, these regulations are briefly summarized below.

2.2 Overvieew of EPA AFO/CAFO Definitions and Effluent Limits, Under the Federal NPDES Program

Under the federal NPDES program, EPA has developed regulations that define which facilities constitute AFOs and which constitute CAFOs. Under these regulations, facilities that constitute CAFOs are defined as point sources for purposes of the NPDES program. No facility may discharge pollutants from a point source to waters of the United States without a NPDES permit.

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[1] State NPDES authorization may be obtained for the base program, as well as for components addressing federal facilities, pretreatment, general permits, and sludge. The Virgin Islands is also authorized to administer the NPDES program.

[2] Alaska, Arizona, Idaho, Massachusetts, New Hampshire, and New Mexico are not authorized to implement the NPDES program. Oklahoma is delegated to implement the NPDES program, however; Oklahoma does not issue a general NPDES permit specifically for CAFOs and is in effect unauthorized to administer the CAFO portion of the NPDES program. Oklahoma CAFOs should apply for coverage under the general NPDES CAFO permit issued by U.S. EPA Region 6 (See 63 FR 53002).

The existing federal regulatory definitions of AFOs and CAFOs are provided at 40 *C.F.R.* § 122.23 and Part 122, Appendix B. These regulations define an AFO as a facility that meets the following criteria:

- Animals have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period.

- Crops, vegetation, forage growth, or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility.[3]

Federal regulations define a CAFO generally as an animal feeding operation that:

- Confines more than 1,000 animal units (AUs)[4], or

- Confines between 301 to 1,000 AUs and discharges pollutants:

  - Into waters of the United States through a man-made ditch, flushing system, or similar man-made device, or

  - Directly into waters of the United States that originate outside of and pass over, across, or through the facility or otherwise come into direct contact with the animals confined in the operation.

The CAFO regulatory definition also provides that facilities that discharge pollutants only in the event of a 25-year, 24-hour storm event are not defined as CAFOs.

Under existing federal regulations, the permitting authority (e.g., EPA or an authorized state) can designate an AFO as a CAFO upon determining that the operation is a significant contributor of pollution to waters of the United States. This determination, which takes a number of factors into account (e.g., slope, vegetation, and the proximity of the operation to surface waters), is based on an onsite inspection by the agency that issues the permits and is subject to certain discharge conditions.

In addition to the provisions that define AFOs and CAFOs, EPA has promulgated an effluent limitation guideline (ELG) applicable to feedlots (feedlots are defined in the same manner as CAFOs) (see 40 *C.F.R.* § 412). This regulation generally establishes that CAFOs are subject to a zero discharge standard except for discharges, resulting from a catastrophic or chronic storm event, that occur from a properly maintained and operated waste management system designed to control waste and runoff from a 25-year, 24-hour storm.

2.3 State Programs/Initiatives

[3] 40 *CFR* 122.23 (b)(1).

[4] The following examples are animal quantities equivalent to 1,000 animal units: 1,000 slaughter and feeder cattle, 700 mature dairy cattle, 2,500 swine each weighing more than 25 kilograms, 30,000 laying hens or broilers (if a facility uses a liquid manure system), and 100,000 laying hens or broilers (if a facility uses continuous overflow watering). See 40 *CFR* Part 122, Appendix B.

The national summary of state programs and initiatives is divided into four categories: (1) regulatory programs used by states, (2) State definitions of CAFO/AFO, (3) use of general versus individual permits, and (4) key permit conditions.

2.3.1 Regulatory Approach

Figure 1 provides a state-by-state depiction of the AFO permitting mechanisms available in each state. States have five categories of permitting mechanisms:

- Federally Administered NPDES Program
- Federally Administered NPDES Program and State Administered Non-NPDES Program
- State Administered NPDES Program only
- State Administered NPDES Program and State Administered Non-NPDES Program
- State Administered Non-NPDES Program only

As discussed above, 44 states are authorized to implement the base NPDES CAFO program. As illustrated in Figure 1 and summarized in Table 1, of the 44 states authorized to implement the NPDES CAFO program:

- Thirty-two states administer a State NPDES CAFO program in combination with some other state permit, license, or authorization program. Typically, this additional State authorization is a construction or operating permit.

- Seven states regulate CAFOs exclusively under their state NPDES authority (HI, NJ, NV, NY, RI, TN, WV).

- six states have chosen to solely regulate CAFOs under State non-NPDES programs (CO, MI, NC, OR, SC, VA).

Of the six states not authorized to administer the NPDES program:

- Three rely solely on federal NPDES permits to address CAFOs (AK, MA, NH).

- Three impose some form of a state non-NPDES program requirement, although EPA remains responsible for administering the NPDES CAFO requirements in these states (AZ, ID, NM).

While Oklahoma is one of the 44 NPDES-delegated states, Oklahoma does not have a general NPDES permit specific to CAFOs. In this special case, Region 6 administers the portion of Oklahoma's NPDES program that deals with CAFOs by covering Oklahoma CAFOs under the Region 6 general NPDES permit for CAFOs. Oklahoma also uses a State non-NPDES operating permit to regulate state CAFOs.

Overall, 28 states have a combination of permitting mechanisms available for addressing environmental impacts from AFOs. Eleven states exclusively regulate CAFOs under a state or federal NPDES program. Five states (CO, MI, NC, SC and OR) only regulate AFOs under a

state non-NPDES program, with Colorado and Michigan not requiring any AFOs to obtain any form of operating permit.

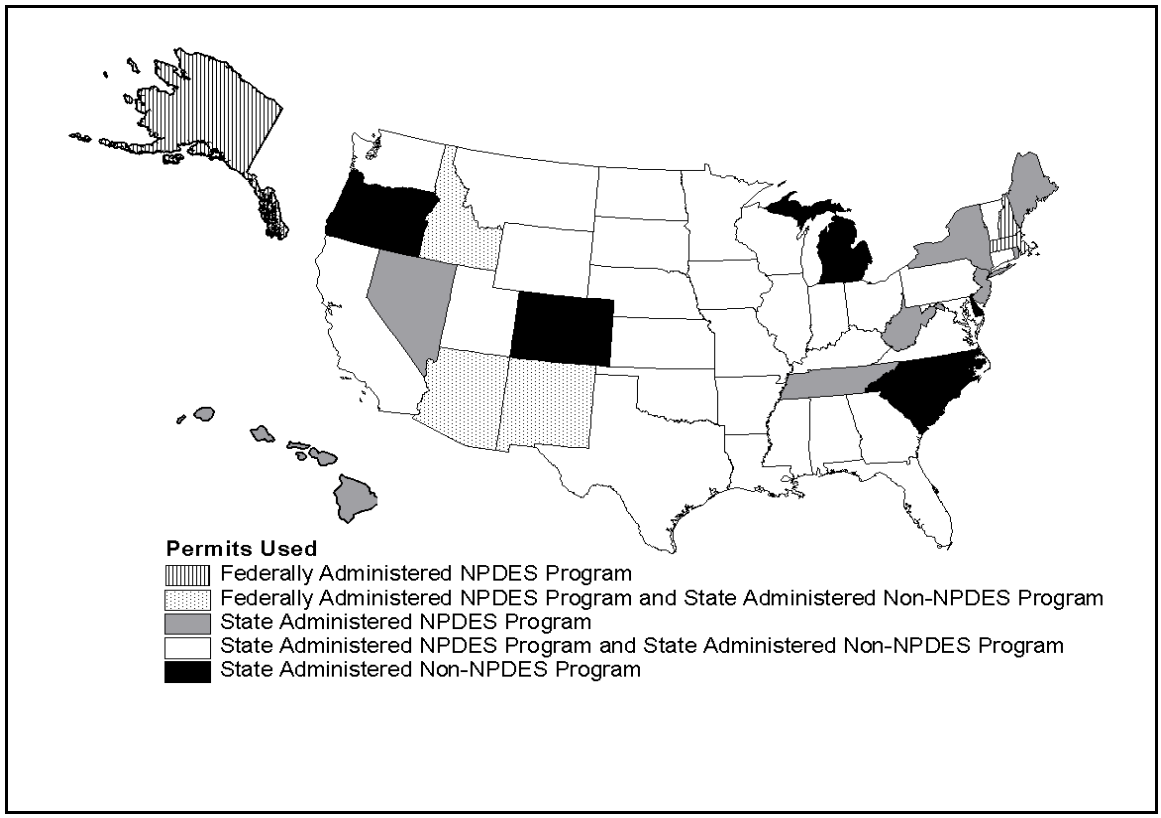

Figure 1. Regulatory Mechanisms for AFO Permitting in Each State

2.3.2 State Definitions of CAFO

EPA and state definitions of a CAFO are important because the definitions determine the scope of the existing federal and state regulatory programs. EPA's definition of a CAFO is based on the length of time animals are confined, the number of animals confined (animal units), and whether or not the facility directly discharges pollutants into waters of the United States. Virtually all state NPDES CAFO programs use the federal definition for CAFO. The vast majority of states also use the federal definition of CAFO for State non-NPDES CAFO programs. Several states, however, use a lower numeric threshold (number of animal units) for non-NPDES permitting. For example, Minnesota issues individual NPDES permits to confined feeding operations as defined by federal regulation and State feedlot permits (non-NPDES) to facilities with more than 10 animal units (calculated by using the formula used in the federal definition).

States that use the federal definition of CAFO may also increase the scope of coverage required through state NPDES programs by reducing the number of animals (number of animal units) a facility can confine before being subject to permitting.

Table 1. Identification of Permit Type and Permit Requirements Within State AFO Programs in the United States[1]

State	State NPDES	State Control Mechanism[2] (non-NPDES)		General/ Individual Permits				Permit Conditions[3]			
		Construction	Operating	NPDES		State non-NPDES		Effluent[4]	Management	Land Application	
				General	Individual	General	Individual			Agronomic Rates	Offsite
AL	✓	✓	✓	✓	✓			✓	✓	✓	
AK	ND[5]										
AR	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
AZ	ND		✓	✓		✓				✓	
CA	✓	✓	✓	✓		✓	✓	✓		✓	
CO	*	✓	✓				✓	✓	✓	✓	
CT	✓	✓			✓		✓	✓	✓	✓	
DE	✓		✓						✓		
FL	✓	✓	✓		✓			✓	✓	✓	
GA	✓		✓	✓	✓		✓		✓	✓	
HI	✓				✓						
IA	✓	✓	✓		✓		✓	✓	✓	✓	✓
ID	ND	✓	✓	✓			✓	✓	✓	✓	✓
IL	✓	✓	✓	✓	✓		✓	✓	✓	✓	
IN	✓	✓	✓		✓				✓	✓	
KY	✓	✓	✓			✓	✓	✓	✓	✓	✓
KS	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓

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		Construction	Operating	NPDES		State non-NPDES		Effluent[4]	Management	Land Application	
				General	Individual	General	Individual			Agronomic Rates	Offsite
LA	✓		✓		✓		✓	✓	✓	✓	
MA	ND										
MD	✓	✓	✓	✓	✓		✓	✓	✓	✓	
ME	✓		✓		✓			✓	✓	✓	✓
MI	*										
MN	✓	✓	✓		✓		✓	✓	✓	✓	
MO	✓	✓	✓	✓	✓		✓	✓	✓	✓	
MS	✓		✓	✓	✓	✓	✓	✓			
MT	✓	✓	✓	✓	✓	✓	✓	✓		✓	
NE	✓	✓	✓		✓		✓	✓	✓	✓	
NC	*		✓			✓	✓	✓	✓	✓	
ND	✓	✓	✓		✓		✓	✓	✓	✓	
NH	ND										
NJ	✓				✓					✓	
NM	ND		✓				✓		✓	✓	
NV	✓				✓						
NY	✓			✓	✓			✓	✓	✓	

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		Construction	Operating	NPDES		State non-NPDES		Effluent[4]	Management	Land Application	
				General	Individual	General	Individual			Agronomic Rates	Offsite
OH	✓	✓	✓	✓	✓		✓	✓	✓	✓	
OK	✓	✓	✓	✓	✓		✓	✓	✓	✓	
OR	*	✓	✓			✓	✓			✓	
PA	✓		✓	✓	✓			✓	✓	✓	✓
RI	✓				✓						
SC	*	✓	✓			✓	✓	✓	✓	✓	
SD	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
TN	✓			✓	✓			✓	✓	✓	
TX	✓		✓	✓	✓		✓	✓	✓	✓	
UT	✓	✓	✓	✓	✓		✓		✓		
VA	✓		✓			✓	✓	✓	✓	✓	
VT	✓	✓					✓	✓	✓	✓	
WA	✓		✓	✓	✓	✓	✓	✓	✓	✓	
WI	✓	✓	✓	✓	✓			✓	✓	✓	
WV	✓							✓	✓	✓	
WY	✓	✓			✓		✓	✓	✓	✓	
Totals	38	27	36	20	32	12	31	35	38	40	8

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State	State NPDES	State Control Mechanism[2] (non-NPDES)		General/ Individual Permits				Permit Conditions[3]			
		Construction	Operating	NPDES		State non-NPDES		Effluent[4]	Management	Land Application	
				General	Individual	General	Individual			Agronomic Rates	Offsite

[1] Blank data cells indicate that the program element was not a primary component of the state program or information was not sufficient to make a determination.

[2] State control mechanisms include all forms of formal state approval required to construct or operate an AFO, such as state issued non-NPDES permits, letters of approval, and certificates of coverage.

[3] Permit conditions are requirements imposed through either NPDES or state non-NPDES programs.

[4] Effluent limits refer to whether or not a state imposes federal effluent limits to AFOs/CAFOs (i.e., no discharge allowed except during 25 year, 24- hour storms). A check could indicate that a state imposes effluent limits that are more strict than the federal requirements (e.g., Arkansas does not allow any discharges regardless of storm events).

[5] ND = States not authorized to administer the NPDES program.

* Although authorized to administer the NPDES program, the state chooses to use a separate program to address AFOs.

Some states have unique definitions for their livestock regulatory programs that do not follow the federal definition (See Table 2). States typically base their definition on number of animals confined, weight of animals and design capacity of waste control system, or gross income of agricultural operation. These definitions are exclusively applied to State non-NPDES programs.

Table 2. Selected State CAFO Definitions that Differ from the EPA Definition and Use of the Definition in Regulatory Control

State	Classification Scheme	Facilities Subject to State Non-NPDES Regulatory
Indiana	Number of animals	Operation with 600 swine, 300 cattle, or 30,000 birds
Iowa	Weight of animals in a confinement feeding operation	Permitting threshold for construction permit based on type of waste control system and design capacity (based on weight) of that system (e.g., an anaerobic lagoon with a design capacity of 400,000 lbs of bovine requires construction permits)
Kansas	Number of animals	Operations with 300 animal units
Maryland	Gross income and animal units	All agricultural operations with incomes of at least $2,500 or eight animal units
North Carolina	Number of animals	Operations designed for 100 head of cattle, 75 horses, 250 swine, 1,000 sheep, or 30,000 birds

One important difference between state livestock regulatory programs and the federal program is that numerous states have addressed the issue of authority to issue permits (or other control mechanisms) to CAFOs by requiring that all or a specified subgroup of CAFOs regardless of whether they have a direct point source discharge of pollutants to U.S. waters obtain a permit.[5] This requirement is imposed under state, not federal regulations.

For example, Arkansas requires all AFOs that use a liquid waste management system to obtain permit coverage under either the State-issued general permit or an individual permit. AFOs with dry waste management systems are not automatically required to obtain a permit; however, all facilities with more than 1,000 animal units are subject to coverage under the State's general permit. This is an important distinction because states have opted to expand the scope of facilities that fall within the definition of a CAFO by eliminating the requirement that a facility must have a discharge before being considered a CAFO. In other words, states are requiring large facilities with a potential to discharge to abide by CAFO rules.

2.3.3 General/Individual Permits

The regulation of CAFOs is challenging, in part, because of the large number of facilities across the country. In 1995 it was estimated that 450,000 operations nationwide confined or concentrated animals, of which a very conservative estimate indicated that at least 6,600 had

[5] Preliminary data indicate that the following states require all or a subset of CAFOs (under various definitions) to obtain permits: AL, AR, AZ, CO, DE, IA, ID, IN, KS, KY, MN, MS, NC, OH, OR, SC, WY.

more than 1,000 animal units and may have been considered CAFOs under the federal definition[6]. More recent estimates describe an AFO universe of approximately 375,700 operations of which approximately 12,600 are AFO operations with more than 1,000 AUs, 26,500 are AFO operations with 300-1,000 AUs, and 336,600 are AFO operations with fewer than 300 AUs.[7] One way of reducing the administrative burden associated with permitting such large numbers of facilities is through general permits. Existing regulations provide that general permits may be issued to cover a category of discharges within a geographic region. Within such areas, general permits may regulate either storm water point sources or a category of point sources that involves similar operations with similar wastes. Operations subject to the same effluent limitations and operating conditions, and requiring similar monitoring, are most appropriately regulated under a general permit. EPA and the states are using general permits to regulate CAFOs, and this trend appears to be increasing. South Dakota, for example, has established two general permits for CAFOs, one to address swine operations and another for all other livestock.

Of the 44 states authorized to implement the NPDES program:

- Twenty have issued a State NPDES general permit for CAFOs (this number excludes federally issued general permits).

- Twelve have issued a state non-NPDES general permit for CAFOs.

Of the six states not authorized to administer the NPDES program (this excludes Oklahoma), four are subject to a federal general permit.[8]

2.3.4 Permit Conditions

Normally, a NPDES permit will include several types of permit conditions, including technology-based effluent limits (i.e., zero discharge except for discharges resulting from chronic or catastrophic rainfall events if a facility is designed to hold process wastewater and runoff from a 25-year, 24-hour storm for CAFOs subject to § 412), water quality-based effluent limits (if the technology-based limit will not ensure compliance with State water quality standards), monitoring and reporting conditions, special conditions (e.g., conditions that impose additional controls beyond numeric limits, such as best management practices [BMPs]), and standard conditions (e.g., duty to comply, duty to ensure proper operation, and duty to provide information).

The federal technology-based effluent limit for CAFOs is "no discharge." The effluent limit includes an exception in the event of chronic or catastrophic rain for facilities that have been

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[6] *Animal Agriculture: Information on Waste Management and Water Quality Issues*, General Accounting Office, 1995.

[7] 66 *FR* 2985, January 12, 2001.

[8] CAFOs in New Mexico and Oklahoma are subject to an EPA Region 6 general permit; facilities in Idaho and Alaska are subject to an EPA Region 10 permit, although no facilities are covered under a NPDES permit in Alaska; and CAFOs in Arizona are subject to an EPA Region 9 general permit, although no facilities are covered under the general permit. New Hampshire, and Massachusetts are located in EPA Region 1, which does not have a general NPDES permit for CAFOs.

designed, constructed, and operated to contain all waste water and runoff from a 25-year, 24-hour storm. States not authorized to implement the NPDES program must use this federal effluent limit.

Authorized states generally are equally as stringent, but may be more stringent. Based on a review of available data, of the 44 states authorized to implement the NPDES program 34 use the federal effluent limitation guideline and 6 use a more stringent limit.

Some states with more stringent effluent limits may partially or totally prohibit discharges related to storm events. In Arkansas, for example, the effluent limit prohibits discharges from liquid waste management systems, including periods of precipitation greater than the 25-year, 24-hour storm event. California requires no discharges from new waste control structures even during 100-year storms. And in Iowa, confinement feeding operations (i.e., roofed AFOs) are prohibited from any direct discharge and must dispose of manure in a manner that will not cause a pollution of surface or ground water.

A key concern regarding the management of CAFO waste is ensuring appropriate land application. Land application is the primary management practice used by CAFOs to dispose of animal waste. Several estimates indicate that 90 percent of CAFO-generated waste is land applied. Where properly done, land application of CAFO waste fosters the reuse of the nitrogen, phosphorus, and potassium in these wastes for crop growth. However, where such wastes are excessively or improperly applied, land application can contribute to water quality impairment. Thirty-four states impose requirements addressing land application either through NPDES or non-NPDES programs. Typical requirements include that CAFO waste be applied at agronomic rates and that CAFO operators develop Waste Management Plans.

The breakout of state requirements is as follows:

- Forty states require that CAFO waste be land applied at agronomic rates.
- Thirty-eight states require the development and use of Waste Management Plans.
- One state, Georgia, issues land application system (LAS) permits.

Agronomic rates are typically based on the nitrogen needs of crops, although some states specify that waste be applied at agronomic rates for nitrogen and phosphorous. The determination of agronomic rates varies from state to state. Some states do not address how agronomic rates should be determined, while others, such as Colorado, require CAFO operators to complete detailed plans and field sampling to determine the appropriate amount of waste that can be land applied.

The complexity and details required in a waste management plan also vary among states. Some states do not explicitly identify what items must be addressed in a waste management plan, whereas others have detailed requirements. Typically, CAFO operators are required to address these items in a waste management plan:

- Estimates of the annual volume of waste.
- Schedules for emptying and applying wastes.
- Rates and locations for applying wastes.
- Provisions for determining agronomic rates (i.e., soil testing).

- Provisions for conducting required monitoring and reporting.
- Written agreements with landowners to accept liquid waste.

2.4 Recent State Initiatives/Trends

One clear indication that states have an increasing interest in expanding their efforts to control water quality impacts from AFOs is the promulgation of new state AFO laws, regulations and program initiatives. At least 28 states have developed new laws or regulations related to AFOs since 1996. For example, Kansas, Kentucky, North Carolina, and Wyoming passed legislation regarding swine facilities, with Kentucky and North Carolina imposing moratoriums on the expansion of swine AFOs until state management/regulatory plans could be developed. Mississippi also has imposed a 2-year moratorium on any new CAFOs.

Alabama's recent efforts include developing an NPDES general permitting rule and a Memorandum of Agreement outlining state agency responsibilities as they relate to AFOs. Washington's Dairy Law subjects all dairy farms with more than 300 animal units to permitting and requires each facility to develop NRCS-approved nutrient management plans. Indiana's Confined Feeding Control Law also requires AFOs to develop waste management plans and receive state approval for operating AFOs.

2.5 Summary

State efforts to manage AFOs are carried out through issuance of NPDES permits and state issued non-NPDES permits and/or authorizations. State AFO regulatory programs are directed in large part at controlling the potential environmental impacts on surface water, but also at protecting ground water and managing industry growth. State permits and/or authorization requirements are often imposed regardless of NPDES requirements. State non-NPDES AFO programs are often more stringent than NPDES programs and state efforts often extend coverage to smaller classes of AFOs. Further, the implementation of state non-NPDES programs often receives more agency attention than the implementation of NPDES programs, with several states actively choosing not to use NPDES permits.

While specific state efforts relating to AFOs vary, most states regulate facilities through permitting programs that require animal waste disposal systems to be constructed to prevent the discharge of animal wastes to waters of the United States. Coverage under state permitting programs depends on such criteria as facility size, potential for discharge, type of facility, and type of waste control. Information indicates that state agencies are increasing their commitment of resources to address environmental concerns from AFOs.

CHAPTER 3. STATE PROFILES

This chapter presents individual profiles of state programmatic and regulatory efforts addressing AFOs for each of the 50 states. These profiles provide a state-by-state summary of the key elements within State AFO regulatory programs. The profiles summarize existing State activities to address environmental and health impacts from AFOs. The profiles provide a comprehensive overview of each State program, including the following:

- A description of the lead regulatory agency(ies) (i.e., permitting authority) and agency(ies) responsible for directing voluntary programs.

- State regulations that address AFOs and voluntary programs that encourage regulatory compliance or the use of best management practices.

- The types of permits issued and the permitting processes for each state, the circumstances for which permits are required (i.e., permit coverage), and the requirements and responsibilities of AFO owners and operators (i.e., permit conditions).

- State enforcement activities, inspection programs, and staffing and funding levels dedicated to addressing AFOs.

- Examples of innovative or interesting state projects or programs to control the potential negative environmental impacts of AFOs.

If information on a particular program element was not readily available, or not identified, the following phrase was used: "no information was found in publicly available sources." Figure 3.1 presents the outline used for each of the state profiles.

1.0 Background

2.0 Lead Regulatory Agency

3.0 State Regulations Regarding AFOs/CAFOs

4.0 Type of Permits
- *NPDES*
- *Other (general use or general agriculture permits, construction permits, and operating permits)*

5.0 Permit Coverage (potential nuisance and/or location)

6.0 Permit Conditions
- *Approvals (permits, letters of intent, or certificates of coverage)*
- *Lagoon Design and Specifications (seepage limits, etc.)*
- *Discharge Rules*
- *Waste Management Plans*
- *Separation Distances*
- *Land Application Requirements*
- *Other Requirements*

7.0 Enforcement Information
- *General Enforcement Information*
- *General Inspection Information*

8.0 Voluntary Programs

9.0 Additional State-Specific Information
- *Cooperative Extension Service*
- *Comprehensive Nutrient Management Plan (CNMP)*
- *Memorandums of Understanding/Agreement (MOUs/MOAs)*
- *Other Information*

10.0 References

Figure 3.1 Outline for Profiles of State Programs and Regulatory Activities Related to Animal Feeding Operations

Delaware's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA, there are 349 AFOs with 300 to 1,000 animal units and 95 AFOs with more than 1,000 animal units in Delaware. These are primarily in the broiler sector (USDA, 1999; USDA, 2000).

The Delaware Nutrient Management Program was established in June 1999 as a result of the Delaware Nutrient Management Law (Title 3, Chapter 22 of the Delaware Code). The purposes are:

- To regulate activities involved in the generation and application of nutrients.
- To establish a certification program that encourages BMPs.
- To establish a nutrient management planning program.
- To develop a systematic and economially feasible nutrient management program that will both maintain agricultural profitability and improve water quality (Rohreer, 2000).

The Delaware Nutrient Management Commission (DNMC) was established to direct the program and develop regulations pertaining to nutrient management, waste management for AFOs, and NPDES permits for CAFOs (DE Department of Agriculture, 2000). Commission members include representatives of various agricultural and environmental groups, a public citizen at large, and the Director of the Division of Soil and Water Conservation. The State Agricultural, Health, and Environmental Department Secretaries and DNMC Program Administrator are ex-officio members of the Commission (Rohreer, 2000).

2.0 Lead Regulatory Agency

The Water Resource Division of the Delaware Department of Natural Resources and Environmental Control (DNREC) administers the regulatory programs related to CAFOs (DNREC, 2000). The Delaware Nutrient Management Commission, under the Delaware Department of Agriculture (DDA), develops regulations pertaining to nutrient management, waste management for AFOs, and NPDES permits for CAFOs (DDA, 2000).

3.0 State Regulations Regarding AFOs/CAFOs

Delaware's unannotated Code of Regulations can be found at *www.lexislawpublishing.com/sdCGI-BIN/om_isapi.dll?clientID=981&infobase=decode.NFO&softpage=browse_frame_pg.* Delaware's Nutrient Management Law is found at Title 3, Chapter 22: 2201-2290.

CAFOs must follow state and federal regulations regarding air quality.

The state of Delaware encourages the use of best management practices for manure management. Guidance on the management of manure can be found in the final regulations under Policies and Procedures for Land Treatment of Wastes, Part IV (Land Treatment), Subpart A. [Subpart B has been reserved while the state conducts further research on animal waste management alternatives.]

4.0 Types of Permits

NPDES

Delaware is authorized to issue NPDES permits (Letzkus, 1997).

Other

Permits are required for manure storage ponds or structures that hold more than 40,000 gallons.

5.0 Permit Coverage

Federal animal unit thresholds apply for NPDES permits.

6.0 Permit Conditions

Approvals

The state has no site approval requirements (NASDA, 1997).

Lagoon Design and Specifications

The state does not have specific design requirements for waste structures, although facilities follow applicable NRCS guidelines. There are no state standards for storage capacity of waste structures or the types of materials used to line the structures. There is a maximum seepage limit of 1 inch/year or 10^{-7} cm/sec (NASDA, 1997).

Discharge Rules

No information was found in publicly available sources.

Waste Management Plans

No information was found in publicly available sources.

Separation Distances

The state restricts siting within 150 feet of water bodies or wells.

Land Application Requirements

Per § 2247, a nutrient management plan (NMP) must be developed by all AFOs with over 8 animal units or persons who control property in excess of 10 acres on which nutrients are applied (note: animal unit threshold under nutrient management act may differ from NPDES thresholds). As of January 1, 2003, nutrient management plan development and implementation is required. Full implementation of the program is required by January 1, 2007 (Rohrer, 2000). The NMP must include the following site-specific handling and storage considerations:

- Diverting clean water from contacting animal waste or litter.
- Preventing storage, collection, and conveyance systems from leaking organic matter,

nutrients, and pathogens to ground or surface water.
- Providing adequate storage to prevent polluted runoff.
- Handling manure and litter to reduce nutrient losses.
- Managing dead animals to protect ground water and surface waters.
- Tillage and crop residue management practices.

The NMP must be amended according to § 2247(d) whenever any significant change occurs in the design, construction, or operation that has a significant effect on the potential for the discharge of pollutants to state waters.

7.0 Enforcement Information

The Delaware Nutrient Management Commission (DNMC) of the Delaware Department of Agriculture is responsible for compliance with nutrient management and CAFO standards. Additional compliance standards for violations became effective January 10, 2001. Nutrient management and CAFO standards will be enforced with administrative penalties, fines, civil sanctions, injunction actions, and restraining orders. Violations to either the nutrient management or CAFO standards can result in civil penalties of no less than $25 and no more than $1,000 for each violation. Every day the violation occurs may be considered as a separate violation with an overall limit of $10,000 (Rohrer, 2000).

Inspection Programs

There are no routine onsite inspections, though periodic inspections may occur (NASDA, 1997).

8.0 Voluntary Programs

Voluntary programs encourage Delaware farmers to implement BMPs. DNMC supports development of BMPs, outreach and education, and the certification program. In addition, the University of Delaware has conducted nutrient managers' training for government and industry representatives. Incentives for CAFOs include state and federal cost-share programs, incentive funds, and low-interest loans (NASDA, 1997).

Nearly 20 percent of Delaware agriculture producers have voluntarily enrolled in an early cooperator nutrient management mandate program to meet nearly all of year 2003 mandates two years in advance. More than 88,000 acres have been signed up for nutrient management planning since September 2000. DNMP has obligated more than $475,000 to assist in this effort (Rohrer, 2000).

9.0 Additional State-Specific Information

Cooperative Extension Service

Information regarding the University of Delaware's Cooperative Extension Service can be obtained at *http://bluehen.ags.udel.edu/deces/.*

Comprehensive Nutrient Management Plan (CNMP) Certification

Delaware has a program for CNMP certification. The program requires certification of persons directly involved with the generation or application of nutrients within the state (Delaware Code Title 3, Chapter 22 Nutrient Management Law). The Delaware Nutrient Management

Commission developed a certification program in June 1999.

The Delaware State Nutrient Management Law requires nutrient management plans (NMPs) for any AFO with more than eight animal units (AUs) or any person who owns, leases, or otherwise controls property in excess of 10 acres on which nutrients are applied (§ 2241). CAFOs regulated under NPDES are required to develop an NMP. The State Nutrient Management Plan requires an NMP to be developed by a certified nutrient handler. Under Delaware's program there are four classes of certified nutrient handlers (§ 2241).

Certification requirements do not apply to individuals who are performing nutrient application services under the direct supervision of a certified person as a private or commercial nutrient handler. The state of Delaware makes nutrient consultants available at no cost through local conservation districts to anyone requesting assistance in developing CNMPs.

Case Studies/Innovative Programs

The state emphasizes voluntary implementation in addition to regulation, to achieve water quality improvement. Approximately 65 percent of all poultry growers are storing manure under cover, and more than 70 percent are composting rather than burying their dead animals in the ground. In addition, manure application rates have fallen, and new technologies such as pre-sidedress nitrogen tests, manure analysis, and precision agriculture equipment are used (DNREC, 1999a; Rohrer, 2000).

The Delaware Coastal Nonpoint Pollution Control Program, commonly known as 6217, has an agricultural component that identifies facility wastewater and runoff from large and small confined animal facilities as nonpoint sources that need to be addressed (DNREC, 1999b).

DNMP is operating a nutrient relocation service by providing cost-share assistance to relocate manure from areas that have an excess of manure to alternative-use projects or to areas in need of nutrients (Rohrer, 2000).

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Maryland's CAFO Program

1.0 Background

Based on information provided to EPA by USDA, there are 475 AFOs with 300 to 1,000 animal units and 130 AFOs with more than 1,000 animal units in Maryland. These are primarily in the broiler sector (USDA, 1999; USDA, 2000).

Maryland's General Assembly passed the Water Quality Improvement Act (WQIA) of 1998, and has developed specific regulations to implement the act. The Act mandates nutrient management plans for all Maryland farms with eight or more animal units (Nishida, 2000).

Poultry processors are required to help growers dispose of excess chicken manure in a manner that will not increase nutrient loading to the Chesapeake Bay (Nishida, 2000).

2.0 Lead Regulatory Agency

The Maryland Department of the Environment (MDE), Water Management Administration, Water and Wastewater Permits Program administers the NPDES permitting program.

The Maryland Department of Agriculture (MDA) has full legislative authority to implement the WQIA of 1998 (MDA, 2000c).

3.0 State Regulations Regarding AFOs/CAFOs

Facilities that meet EPA's federal definition of CAFOs are considered point sources and must be permitted, either through a general permit or an individual permit.

Code of Maryland (COMAR) regulations (COMAR 26.08.03) prohibit the discharge of any wastewaters, regardless of volume, to waters of the state unless authorized by a discharge permit. For animal feeding operations, improper discharge of wastewaters (as defined under the law) can originate from:

- Improper storage of animal wastes
- Improper design, construction, or operation of waste storage facilities
- Improper application of wastewater to pastures or cropland (including problems of timing or rates)
- Leaking storage or treatment facilities
- Storage or treatment unit overflows or structural failures
- Discharge of runoff contaminated by contact with concentrated animal waste

4.0 Types of Permits

NPDES

Maryland's General NPDES Permit for Discharges from CAFOs is located at *www.mde.state.md.us/permit/wma/forms/anim_feeding/af_per.pdf*.

Other

Animal Waste Storage Structure Construction Notification Permits are required prior to

constructing an animal waste or a manure storage structure.

5.0 Permit Coverage

The operator of animal feeding operations with more than 1,000 animal units and smaller facilities that have confined animals that come into direct contact with surface waters must submit a notice of intent (NOI) to obtain coverage under the NPDES General Discharge Permit for Discharges from Concentrated Animal Feeding Operations (General Permit 96-AF).

Under the permit, discharges in accordance with permit conditions are authorized from animal waste systems. Discharges from animal waste systems to surface water can occur only in the event of a 25-year, 24-hour or greater storm event. Animal waste systems covered by the permit include feedlots and loafing areas, storage facilities, handling equipment, and field application operations.

The Maryland NPDES Permit program and the Maryland Nutrient Management Program are operated by separate agencies under distinct programs. The NPDES Program requires CAFOs to prepare a waste storage and handling plan. All of these facilities also would be covered by the Water Quality Improvement Act, which requires all agricultural operations with gross annual incomes in excess of $2,500 or livestock operations with more than 8 animal units to prepare a nutrient management plan (MDA, 2000c).

6.0 Permit Conditions

Approvals

MDE is responsible for developing and approving NPDES permits issued to CAFOs in Maryland. The Maryland Department of Agriculture (MDA) is responsible for the implementation of the Nutrient Management Program. This program requires that Nutrient Management Plans are developed by individuals who have been certified by MDA.

Lagoon Design and Specifications

All wastewater treatment and storage systems must be operated and maintained as required by Natural Resources Conservation Service (NRCS) Waste Management System Standard 312. The facility must be operated in accordance with a Waste Management System Plan, approved by the Soil Conservation District, and must be available onsite for inspection.

All earthen embankment structures must be inspected weekly for structural stability. The outer embankment and top of the berm must be kept free of shrubs and trees. Records of inspections and maintenance must be kept at the facility for inspection by the Department personnel.

Discharge Rules

Discharges are authorized from animal waste systems to ground water via application of liquid wastewater to the soil surface and discharge from field application of wastewater. Discharges from animal waste systems to surface water can occur only in the event of a 25-year, 24-hour storm event (or worse). Animal waste systems include feedlots and loafing areas, storage facilities, handling equipment, and field application operations.

Waste Management Plans

Waste Management System Plans for facilities that include animal wastewater distribution systems also must meet all requirements of NRCS Waste Utilization Standard 633 and of COMAR 15.20.04.09 and 15.20.04.10 for nutrient management plan content and recommendations.

Separation Distances

The permittee must provide adequate means to prevent spray droplets from entering adjacent properties, by either direct application or wind carryover. These means must include a buffer zone that is:

- 200 feet from the wetted perimeter of the spray irrigation site to property lines in an open area or 100 feet in an area with a tree buffer
- 500 feet from the wetted perimeter of the spray irrigation site to houses or other occupied structures in an open area or 250 feet in an area with a tree buffer
- 50 feet from waters of the state, including intermittent streams
- Approved by the Maryland Department of the Environment as suitable to control the movement of spray onto adjacent land

Land Application Requirements

For facilities utilizing liquid animal wastewater, the plan must also comply with NRCS Irrigation Water Management Standard 449:

- The annual average hydraulic loading rate must not exceed 2 inches per week, and animal wastewater applied must not exceed the long-term soil infiltration rate or result in surface runoff or ponding.

- Distribution of treated wastewater must not take place during periods of precipitation, high winds, freezing conditions, or saturated soil.

- Prior to wastewater distribution, the permittee must provide a waste storage unit that:
  - Meets the requirements of NRCS standard 425 for waste storage ponds, meets the requirements of NRCS Standard 359 for waste treatment lagoons, or meets the requirements of NRCS Standard 313 for agricultural waste storage facilities.
  - Is sufficient to prevent surface discharge except in the case of a 25-year, 24-hour storm event.

- The permittee must provide adequate means to prevent animal wastewater distributed by drop irrigation from entering adjacent properties by direct application, runoff, or wind carryover. The permittee must maintain a buffer zone that is at least 50 feet from waters of the state, including intermittent streams.

- The facility must be operated at all times to prevent the facility from becoming a public nuisance and to minimize the possibility that offensive odors will escape from facility boundaries.

- The farm operator must keep daily irrigation data in the log and must describe the area(s) or

section(s) under irrigation, application rate and time, instances of ponding or runoff, and weather conditions. The log must be kept onsite and be available for inspection by Department personnel upon request.

7.0 Enforcement Information

NPDES enforcement penalties are consistent with federal requirements.

Under the WQIA, farms that do not develop a Nutrient Management Plan may be fined up to $250. Failure to implement the plan can result in fines of up to $200 per year. Other penalties are loss of any current privileges to retrieve cost-share grants and limits on future cost-share assistance. Subsequent violations incur fines of up to $100 for each occurrence, not to exceed $2,000 per farmer or operator per year (MDA, 2000b).

Deadlines for implementing permit conditions vary depending on the type of fertilizer used. Farmers using commercial fertilizers are required to have nitrogen and phosphorous-based nutrient management plans developed by December 31, 2001. These plans must be implemented by December 31, 2002. Farmers applying animal manure, biosolids, or other organic nutrients must have a nitrogen-based plan developed by December 31, 2001 and implemented by December 31, 2002. Development of a phosphorous-based plan is required by July 1, 2004, with implementation due by July 1, 2005. Farmers applying sludge or manure are required to develop nitrogen and phosphorous nutrient management plans by July 1, 2004 (MDA, 2000b).

Inspection Programs

To ensure that the data submitted by the dischargers are representative and accurate, MDE's Environmental Risk Assessment Program conducts compliance sampling inspections on an annual basis at each major industrial wastewater discharger and significant non-major dischargers in the state (MDE, 2000).

MDA will conduct onsite evaluations to assess the proper implementation of the nutrient management plan. MDA intends to develop additional regulations to monitor compliance (MDA, 2000c).

8.0 Voluntary Programs

Tax Credit

The WQIA of 1998 provides a tax credit to eligible farmers of up to $4,500 to help make the transition to phosphorous-based nutrient management planning. Credits may be earned for up to 3 years and "rolled over" for 5 years. Additional deductions will be available for equipment purchases for poultry or livestock manure spreading (MDA, 2000c).

Cost-Share Assistance for Nutrient Management Plan Development

The Maryland Agricultural Water Quality Cost-Share (MACS) Program offers cost-share assistance of up to 50 percent—not to exceed $3 per acre—for farmers who want their nutrient management plan developed by a non-governmental consultant. Nutrient management plans developed with cost-share assistance are required to be implemented as they are developed. Farmers should contact their soil conservation district to apply. Nutrient management plans

developed by Maryland Cooperative Extension consultants are provided free of charge (MDA, 2000c).

The MACS Program can provide up to 87.5 percent of the cost to install BMPs, such as animal waste management systems, to protect water quality. Local Soil Conservation Districts provide free technical assistance in designing projects and assist with the application process.

Courses on Nutrient Management

MDA has developed several environmental programs aimed at controlling impacts from agriculture activities and educating farmers and the public on the role of agriculture and environmental conservation. The state provides financial and technical assistance, as well as staffing support, to the state's 24 soil conservation districts in their promotion of local soil conservation and water quality programs. Programs are implemented through Soil Conservation and Water Quality Plans on individual farms, featuring a wide range of agricultural"best management practices" to protect the environment. These plans help farmers prevent soil erosion, control nutrient pollution, and protect water quality.

9.0 Additional State-Specific Information

Cooperative Extension Service

Information regarding the University of Maryland's Cooperative Extension Service can be obtained at *www.agnr.umd.edu/CES/*. Refer to the Voluntary Programs section above for a description of some of Maryland's Extension Service programs.

Comprehensive Nutrient Management Plan (CNMP) Certification

MDA Nutrient Management Regulations (Title 15, Subtitle 20) require CAFOs to have a nutrient management plan prepared by a certified nutrient management consultant. State NPDES regulations and general permits for CAFOs do not require certification of preparers of the waste management plan.

MDA developed a CNMP certification program in 1992. Individuals certified by MDE are eligible to prepare CNMPs if they pass an examination. Requirements for certification include training, examination, continuing education, minimum credentials, and renewal (15-20.03).

Case Studies/Innovative Programs

MDA is actively involved with environmental conservation programs particularly as they relate to the state's Nutrient Management Program. This involvement includes conducting specific surveys and studies to characterize agriculture nutrient management practices in Chesapeake Bay watersheds and running a nutrient management training program. In 1998, the Maryland General Assembly established the Animal Waste Technology Fund to encourage individuals, partnerships, and companies to develop alternative uses of animal waste. Pilot projects that demonstrate or commercialize existing technology will be eligible for funding.

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Pennsylvania's CAFO Program

1.0 Background

In February 1999, Pennsylvania's Department of Environmental Protection (DEP), Bureau of Water Protection (WQP), released its CAFO strategy in a document titled *Final Strategy for Meeting Federal Requirements for Controlling the Water Quality Impacts from Concentrated Animal Feeding Operations*. The strategy uses tools already in place to control excess nutrient runoff from Pennsylvania's CAFOs. The strategy aims to ensure facilities are constructed and operated in an environmentally sound manner while allowing producers to pursue profitable and technologically sound agricultural production (PA DEP, 2000a). Pennsylvania's CAFO permitting program now regulates approximately 1,000 farms. An additional 650 non-regulated farms have agreed to voluntarily follow the criteria in this regulation (Hayes, Hess, 2000).

To provide consistency with other state laws, the term *animal equivalent unit* (AEU), defined by Pennsylvania's 1996 Nutrient Management Act, is used in place of the federal term *animal unit* (AU). AEUs are based on animal weight, and one AEU is equal to one pound of animal weight; AUs are based on the number of animals. Pennsylvania considers the AEU to be as protective of water quality as the AU (PA DEP, 2000a).

Based upon information provided to EPA by USDA, there are 704 AFOs with 300 to 1,000 animal units and 313 AFOs with more than 1,000 animal units in Pennsylvania. These are primarily in the swine, broiler, and layer sectors (USDA, 1999; USDA, 2000).

2.0 Lead Regulatory Agency

The State Conservation Commission and the Department of Environmental Protection have authority to regulate the state's CAFOs under Title 25 of the Pennsylvania code.

3.0 State Regulations Regarding AFOs/CAFOs

Under the Clean Streams Law (35 P.S. §§691,169.1001), 25 PA Code Chapter 101 requirements were adopted in 1997 to cover the storage, handling, and application of manure. The requirements cover all operations that produce, store, or apply manure by regulating design, construction, and operations of all manure storage facilities and rates of manure application. Under the Nutrient Management Act of 1993 (3 P.S. §§1701, 1718), 25 PA Chapter 83 Subchapter D became effective in October 1997. It assures proper handling and application of manure from CAFOs. Agricultural status exempts CAOs from air quality regulation, but CAOs must obey state wetland regulations.

4.0 Types of Permits

NPDES

Pennsylvania is authorized to administer the NPDES program. DEP proposes additional requirements for large farming operations (those with more than 1,000 AEUs). These additional requirements are a Preparedness, Prevention, and Contingency (PPC) plan; a Water Quality Management Part II CAFO permit for new or expanded manure storage facilities and professional engineer's certification for existing manure storage facility design, construction, and operation; and an importer or broker agreement for addressing the storage and/or land application

of exported manure. These are new requirements (PA DEP, 2000a).

Other

The following, where applicable, are required for all CAFOs:

- An approved Nutrient Management Plan under the Pennsylvania Nutrient Management Regulations.
- Implementation and availability of the Chapter 102 Erosion and Sedimentation Control Plan for earthmoving activities, including plowing and tilling where manure is applied.
- An NPDES Permit for storm water discharges for earth disturbance of 5 acres or more.

5.0 Permit Coverage

All CAFOs in Pennsylvania must obtain coverage under an NPDES CAFO Permit (PA DEP, 2000b).

Permittees must develop and implement plans that include BMPs to address runoff and potential groundwater contamination in barnyards and feedlots through the services of a professionally certified and trained specialist (Hayes, Hess, 2000).

The following operations require an Individual NPDES Permit:

- Existing operations with more than 1,000 AEUs and in a Special Protection Watershed.
- New or expanding operations with more than 1,000 AEUs.
- New, expanding, or existing CAOs with more than 300 AEUs located in a Special Protection Watershed.
- Any operation with a direct discharge to surface waters during a storm event less than a 25-year, 24-hour storm.

Some operations that are not in Special Protection Watersheds may operate under a General NPDES Permit:

- Existing CAOs with more than 300 AEUs
- Existing operations with more than 1,000 AEUs
- New or expanded CAOs with 301 to 1,000 AEUs

An operation that existed on or before January 16, 1998, is considered an existing operation. A General NPDES Permit is contingent upon approval of the Nutrient Management Plan by the conservation district or the State Conservation Commission.

6.0 Permit Conditions

Instructions for completing and submitting a Notice of Intent for Coverage under the CAFO NPDES General Permit are provided at:
www.dep.state.pa.us/dep/deputate/watermgt/WQP/Forms/PM-WQ0032In.pdf.

Approvals

CAFOs with more than 1,000 AEUs and operators with plans prepared under the Nutrient

Management Act must obtain registered professional engineer certification that the design and construction of existing, new, or expanded liquid and semi-solid manure storage facilities comply with the standards of the "*Pennsylvania Technical Guide*." (PA DEP, 2000a).

Lagoon Design and Specifications

- All agricultural operations with more than 1,000 AEUs must provide at least a 2-foot freeboard for new or expanded waste storage facilities at all times.
- An agricultural operation with 1,000 AEUs or less must provide at least a 12-inch freeboard for waste storage ponds and at least a 6-inch freeboard for waste storage structures.
- Agricultural operations with more than 1,000 AEUs must provide at least 12 inches of freeboard on existing waste storage ponds and 6 inches on existing waste storage structures (as described in the "*Pennsylvania Technical Guide*"), and these facilities must be certified as adequate by a Pennsylvania registered professional engineer.

Where the manure is semi-solid or liquid consistency, manure storage facilities must be designed, constructed, and certified by a Pennsylvania registered professional engineer.

All manure storage ponds must be designed in accordance with Standard PA-425 and Standard PA-313. The manure storage ponds must be watertight for the containment of waste and lined with a compacted clay soil. Soil liners must be designed and built in accordance with Appendix 10D of the *Agricultural Waste Management Field Handbook*. Manure storage should be designed and built of concrete, steel, durable plastic, or a combination of these materials, and should be designed and built to prevent leaching or runoff of contaminated water into surface water or ground water.

Discharge Rules

All practices must be designed in accordance with the *'Pennsylvania Technical Guide* " standards and the *Manure Management for Environmental Protection Manual* and must prevent or eliminate the discharge of manure or contaminated water under all weather conditions. Pennsylvania has eliminated the 25-year, 24-hour storm event exemption for CAFOs over 1,000 AUs (Hayes, Hess, 2000).

Waste Management Plans

Pennsylvania requires all farms to install manure storage facilities that meet NRCS standards (Hayes, Hess, 2000). The Pennsylvania Nutrient Management Regulations (Title 25, Chapter 83.201 et seq.) require a CAO to submit a complete Nutrient Management Plan for approval to a designated County Conservation District or the State Conservation Commission. A CAO plan must be implemented according to the schedule in the approved plan. The plans cover:

- Farm identification
- Plan summary
- Best management practices schedule
- Nutrient application
- Excess manure utilization
- Manure management, including barnyard areas
- Storm water runoff control
- Manure storage facilities

Separation Distances

Manure application setbacks address situations in which manure movement may occur, such as in high runoff situations (Hayes, Hess, 2000). There are no separation distance standards pertaining to dwellings. Title 25 limits how close to property lines, wells, and waterbodies facilities may be constructed. Manure storage facilities must be 100 to 300 feet from a property line, 100 to 200 feet from a private well, 100 to 400 feet from a public well, and 100 to 200 feet from streams and sinkholes. The distance between waste structures and ground water and the land requirements are based on nitrogen uptake (PA State CAFO Standards Survey Response, 1997).

Land Application Requirements

CAFO owners and operators should follow the requirements in PA DEP's *Field Application of Manure*. The manual describes approved practices for the application of livestock and poultry manure in Pennsylvania and serves as a supplement to *Manure Management for Environmental Protection*. It works in conjunction with requirements under the Nutrient Management Act and the Pennsylvania Strategy for CAFOs.

If manure is applied to CAFO owned or leased land, the CAFO operator is responsible for:

- Nutrient Management Plan (NMP)
- Implementation of NMP
- Storage of manure until applied
- Application of manure

If manure is applied under an agreement between a CAFO operator and an importer,

- CAFO operator is responsible for
  - Providing and signing agreement
  - Preparing and maintaining nutrient transfer sheet
  - Providing informational packets (25 PA Code 83.344)
  - Providing Nutrient Balance Sheet (NBS), if farm is not covered by NMP
- Importer is responsible for
  - Signing and implementing agreement
  - Implementation of NMP or NBS
  - Storage after delivery and before manure is applied, if applicable
  - Compliance with *Manure Management Manual*
  - Erosion and Sedimentation Control Plan
  - Optional: Developing NMP

Application of manure is the responsibility of the party under whose control the manure is spread. This party may be the CAFO operator or the importing farmer, depending on the agreement.

If the agreement is between a CAFO operator and broker,

- CAFO operator is responsible for
  - Providing and signing agreement
  - Preparing manure transfer sheet

  - Providing informational packets (25 PA Code 83.344)
  - Providing manure transfer sheets
- Broker is responsible for
  - Signing and implementing agreement
  - Storage of manure until applied
  - Meeting requirements of section 83.344, relating to exported manure informational packet
  - Maintaining name, location, address, and amount of manure delivered to each site

7.0 Enforcement Information

DEP, the Pennsylvania Farm Bureau, and the County Conservation Districts will continue to cooperatively address complaints for farming operations outside the permit requirements for CAFOs. DEP ensures compliance with CAFO permit requirements. Operators of CAFOs, like all other NPDES and Part II permit holders, will be subject to self-inspection and record-keeping as part of their NPDES and Part II Permits. Ensuring compliance with requirements relating to the permits and other enforcement will be carried out by DEP. Where DEP determines noncompliance has occurred, appropriate action will be initiated to abate pollution (PA DEP, 2000a).

Inspection Programs

Inspections are generally complaint-driven. Violations are also discovered during random compliance checks conducted by authorized program staff and during triannual reviews. Now, PA DEP will inspect all CAFOs with more than 1,000 AEUs at least annually. Reviews are conducted by certified planners, who must evaluate and report on the operation's consistency with the plan (PA State CAFO Standards Survey Response, 1997).

Over the next three years, DEP plans to assess potential discharges of manure from existing manure storage facilities on existing CAOs with more than 1,000 AEUs, beginning with CAOs in High Quality and Exceptional Value watershed areas (PA DEP, 2000a).

CAFOs with an NPDES or Part II permit will be subjected to self-inspection. Those CAFOs with more than 1,000 AEUs must submit self-inspection reports on a quarterly basis (PA DEP, 2000a).

8.0 Voluntary Programs

Any operation that is not a CAO may voluntarily submit a Nutrient Management Plan for approval to a designated County Conservation District or the State Conservation Commission under the Nutrient Management Act (Act 6). Operations with voluntary plans will receive the benefits of the plan only to the extent that the plan is implemented. Benefits may include limited liability protection, operational efficiency, pollution prevention, and financial and technical assistance. Nutrient management plans and runoff controls are required for facilities that have 2 AEUs/acre/year or more.

9.0 Additional State-Specific Information

Cooperative Extension Service

Information about the Pennsylvania State University, College of Agricultural Sciences, Cooperative Extension and Outreach is available at *www.extension.psu.edu/*.

Comprehensive Nutrient Management Plan (CNMP) Certification

The State Conservation Commission developed regulations outlining requirements for Nutrient Management Plans based on Pennsylvania's experience with the Chesapeake Bay Program and the input of the Nutrient Management Advisory Board, DEP, the Department of Agriculture, and other stakeholders (PA DEP, 2000a).

The Nutrient Management Act requires plans be developed by a nutrient management specialist certified by the Department of Agriculture. The plans are reviewed by certified nutrient management specialists employed by county conservation districts, which may be delegated the responsibility for overseeing plan implementation, maintenance, record-keeping, and compliance (PA DEP, 2000a).

A Nutrient Management Plan (NMP), which includes a Contingency Plan required by the nutrient management regulations for emergency planning and response to manure spills and related discharges, is required for all CAFOs. The NMP must be submitted for approval to the county conservation district (CCD) or State Conservation Commission (SCC). The plan is approved at a regular meeting of the county conservation district board, as provided by the Nutrient Management Act. The CCD or SCC must approve the NMP before the NPDES CAFO permit coverage becomes effective. As required by the regulations implementing the Nutrient Management Act, a registered professional engineer must certify that the design and construction of any new manure storage facility is consistent with the "*Pennsylvania Technical Guide*." This certification must be submitted to the DEP (PA DEP, 2000a).

Nutrient Management Plans are required for approximately 1,600 CAOs in Pennsylvania. In addition, both the Nutrient Management Act and its implementing regulations encourage nonregulated farming operations to develop and implement voluntary nutrient management plans. The State Conservation Commission, county conservation districts, DEP, and the Department of Agriculture strongly encourage all livestock and poultry farmers to prepare and implement Nutrient Management Plans for their operations (PA DEP, 2000a).

Case Studies/Innovative Programs

To help promote the implementation of proper manure management, the Department of Agriculture, the State Conservation Commission, and the state Treasury Department have developed a program to make up to $25 million available in low-interest loans to farmers to implement best management practices for manure storage and handling and land management. This assistance will supplement cost share funds already available under the Chesapeake Bay Program in the Chesapeake Bay drainage area, as well as federal EQIP funds and other local, state, and federal funding available statewide (PA DEP, 2000a).

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Virginia's CAFO Program

1.0 Background

The state pollution abatement general permit became effective November 16, 1994, and when it nears expiration on November 16, 2004, the Virginia Department of Environmental Quality (DEQ) most likely will write a new one. The new general permit would reflect any new environmental concerns and contain improvements based on experience gained under the current permit. The proposed new general permit would have to go through the public hearing process and be approved by the State Water Control Board (SWCB). Then producers could register under the new general permit for another 10 years. To regulate activities not covered by VPDES, Virginia has developed the Virginia Pollution Abatement (VPA) permit program. This program focuse on regulating waste disposal in order to prevent discharges to surface waters. Currently 149 animal feeding operations with 300 or more animal units are permitted under the VPA program. Most of them are swine and dairy operations (Treacy, 2000). The state reported that approximately 1,300 poultry operations with 200 or more animal units will be permitted under a VPA general permit by October 1, 2001 (Treacy, 2000). Virginia requires permits for all poultry facilities with 200 or more animal units regardless of whether they handle their animal waste dry or liquid. The number 200 was chosen as the threshold for poultry to capture operations having only one poultry house (Courter, 2000).

On or before January 1, 2000, or before commencing operations, each commercial poultry processor operating in Virginia had to provide technical assistance to the poultry growers on proper management and storage of poultry waste. They also were required to provide education programs on poultry waste nutrient management for the poultry growers with whom they contract, as well as for poultry litter brokers and persons useing poultry waste (VA DEQ, 2001).

Based on information provided to EPA by USDA, there are 600 AFOs with 300 to 1,000 animal units and 210 AFOs with more than 1,000 animal units in Virginia. These are primarily in the broiler sector (USDA, 1999; USDA, 2000).

2.0 Lead Regulatory Agency

The Virginia Department of Environmental Quality (DEQ), Water Programs regulates the NPDES program and pollution discharges from land application from treated waste and surface water. Information can be found at *www.deq.state.va.us/water/*.

3.0 State Regulations Regarding AFOs/CAFOs

Virginia is authorized to issue NPDES permits under the federal Clean Water Act. Authority to regulate CAFOs also is provided by VA Code Sections 62.1-44.15 through 44.30 and Code 9 VAC 25-30-10 et seq. The new Agricultural Stewardship Act applies to CAFOs with no state permits. There are no air quality regulations affecting CAFOs (NASDA, 1997).

4.0 Types of Permits

NPDES

DEQ requires Virginia Pollutant Discharge Elimination System (VPDES) permits for all point source discharges (such as ditches or pipes) to surface waters by businesses, governments, or

individuals (Virginia Code Sections 62.1-44.15 through 44.30, and the Virginia Administrative Code 9 VAC 25-30-10 et seq). EPA maintains authority to review applications and permits for "major" dischargers, a distinction based on discharge quantity and content.

Other

Virginia also issues Virginia Pollutant Abatement (VPA) permits to address nonpoint source pollution, including the land application of animal waste. VPA permits prohibit discharges to surface waters, carry specific waste storage and disposal requirements, and require a nutrient management plan for manure disposal, best management practices (BMPs), ground water monitoring, and sludge monitoring. The VPA permits have a term of 10 years (VA DEQ, 1996). A general CAFO VPA permit became effective on November 16, 1994.

CAFO operators/producers must file a complete Virginia Pollution Abatement (VPA) General Permit Registration Statement with the regional office of DEQ. It requests the owner's name and address, the location of the CAFO, and the number of animals to be fed. Typical requirements of a permit include:

- Prohibition of discharge of pollutants to surface waters.
- Waste storage and disposal requirements.
- For manure disposal, the possible preparation of a nutrient management plan.
- Regulation of the application of waste to snow or ice-covered grounds.
- Best management practices such as berms and buffer strips to protect surface water.
- Ground water monitoring to detect possible contamination.
- Sludge monitoring to determine concentration of pollutants.

Virginia recently issued a Pollution Abatement General Permit for Poultry. This permit requires a registration statement (allowed online), a nutrient management plan, and information regarding dead bird disposal and new construction. This permit applies to all confined poultry feeding operations.

5.0 Permit Coverage

A permit is required for any CAFO having 300 or more animal units (AUs) utilizing a liquid manure collection and storage system. The permit requirement applies only to liquid manure handling systems. Broiler, turkey, and laying-hen operations using a dry manure handling system are excluded. The permit allows a CAFO to operate and maintain waste storage facilities and to apply waste to land.

DEQ may require smaller producers than those listed below to obtain a permit if public complaints and subsequent DEQ inspections indicate the producer is not following acceptable waste management practices.

- More than 200 dairy cattle
- More than 300 feeder and slaughter cattle
- More than 150 horses
- More than 750 swine (55 pounds or more)
- More than 2,000 sheep
- More than 16,500 turkeys (permit required only with liquid waste system)
- More than 30,000 broilers and laying hens (permit required only with liquid waste system)

6.0 Permit Conditions

The General Permit Requirements for Confined Animal Feeding Operations in Virginia can be found at *www.ext.vt.edu/pubs/livestock/446-049/446-049.html*.

Approvals

A Virginia Pollution Abatement (VPA) General Permit Registration Statement must be approved by the local county, town, or city officials, indicating compliance with all local government zoning and ordinance requirements. This statement is called the local government ordinance form (LGOF). A letter from the Department of Conservation and Recreation (DCR) certifying approval of a nutrient management plan (NMP), must be attached to the DEQ permit registration form.

The LGOF ensures that a producer is in compliance with local county, town, or city planning and zoning ordinances. Once it has been determined that the operation appears feasible, detailed planning should begin. The producer also will need to obtain private assistance in designing the facilities and waste management system. These two steps will take the most time in getting a VPA permit.

Lagoon liners must be certified by a liner manufacturer, professional engineer, Natural Resources Conservation Service (NRCS) employee, or soil and water conservation district employee after installation.

Lagoon Design and Specifications

The regulation applies to all liquid waste storage facilities. Storage facilities must be designed to prevent point source discharges of pollutants to state waters except in the case of a storm event greater than a 25-year, 24-hour storm. The facility must provide adequate waste storage capacity to accommodate periods when the ground is frozen or saturated, periods when land application of nutrients should not occur because of limited or nonexistent crop nutrient uptake, and periods when physical limitations prohibit the land application of waste.

New waste storage facilities cannot be built on 100-year floodplains except under special circumstances. Lagoons must include either a synthetic liner of at least 20 millimeters thickness or a compacted soil liner of at least 1 foot thickness with a maximum permeability rating of 0.0014 inch per hour. After installation, the liner must be certified by a liner manufacturer, professional engineer, NRCS employee, or soil and water conservation district employee after installation. The certification of the lagoon liner must be maintained onsite.

Lagoons installed to an elevation below the seasonal high water table (SHWT) or within 1 foot of the SHWT must have ground water monitoring wells. A minimum of one up-gradient and one down-gradient well should be installed for monitoring when they are required. When lagoons are installed below the SHWT, the top surface of the waste must be maintained at least 2 feet above the water table. The lagoon must maintain 1 foot of freeboard at all times, up to and including a 25-year, 24-hour storm.

Discharge Rules

No producer, regardless of size, is permitted to have a point source discharge of waste into surface waters, except in the event of a 25-year, 24-hour storm.

Waste Management Plans

The NMP is designed to ensure that no waste or potentially water-impacting nutrients from the waste reach either ground water or surface water supplies. The plan accounts for the production and utilization of all surplus (or waste) nutrients associated with the animal feeding operation. If the producer follows the NMP, the water supply in the local community and the state will be protected. Because the NMP is critical to the protection of the environment, it is enforceable by law by DEQ once a permit is granted. The NMP is the major tool in the general permit used to protect the environment, so most of the management and reporting requirements in the permit are related to monitoring and enforcing the NMP.

According to the general permit regulation, each NMP must contain at a minimum the following information:

- Site map indicating the location of the waste storage facilities and the fields where waste will be applied
- Site evaluation and assessment of soil types and potential productivity
- Soil, water, and waste sampling and monitoring plans
- Storage and land area requirements
- Calculation of waste application rates
- Waste application schedules

Separation Distances

The general permit mandates buffer zones for the land application of waste. Local zoning ordinances may include greater distances or additional buffer requirements.

- Occupied dwellings, 200 feet (unless the occupant signs a waiver of the buffer zone)
- Water supply wells, 100 feet
- Surface application (surface water courses), 50 feet
- Subsurface injection (surface water courses), 25 feet
- Rock outcroppings (except limestone), 25 feet
- Limestone outcroppings, 50 feet

* Waste should not be applied in such a manner that it would discharge to sinkholes.

Land Application Requirements

Wastes must be land applied at agronomic rates. There are limits on land application in sensitive environmental areas (NASDA, 1997). Producers are required to keep records of when, where, at what rate, and to what crops the animal waste was applied. These records must be kept onsite and made available to DEQ personnel upon request.

Other Requirements

Records must be kept at the facility for three years to meet individual permit requirements and 2 years for general permits. Some permits require a record of freeboard height. No new waste

storage facilities may be built on a 100-year floodplain unless it is able to contain wastes in the event of a 100-year storm.

7.0 Enforcement Information

DEQ personnel have the right of entry to the CAFO to inspect for compliance with the permit during regular business hours or whenever the facility is discharging waste.

8.0 Voluntary Programs

Virginia Cooperative Extension has started a new stewardship program for dairies. A National Pork Producers Council program is offered for Virginia farmers at least once a year. Farmers also get information through visits from soil and water conservation representatives. Environmental Quality Incentives Program (EQIP) funding, state/federal cost-share programs, and tax credits are offered as incentives to farmers (NASDA, 1997).

9.0 Additional State-Specific Information

Cooperative Extension Service

Information regarding Virginia Polytechnic Institute and State University's Cooperative Extension can be obtained at *www.ext.vt.edu/*.

Comprehensive Nutrient Management Plan (CNMP) Certification

The Virginia Department of Conservation and Recreation administers a voluntary nutrient management planning, training, and certification program (VAC5-15-30). To obtain certification, an individual must submit an application and pass an examination. Certification is valid for 2 years. An individual certified as a nutrient management consultant by the state of Maryland or certified as a nutrient management specialist by the Commonwealth of Pennsylvania will be eligible for certification in Virginia by taking the examination (4VAC5-15-50). To renew a certification, an applicant must provide proof of completing one nutrient management plan or completion of 4 hours of continuing education.

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West Virginia's CAFO Program

1.0 Background

Based upon information provided to EPA by USDA it is estimated that there are 150 AFOs with from 300 to 1,000 animal units and 75 AFOs with more than 1,000 animal units in West Virginia. These are primarily in the broiler sector (USDA, 1999; USDA, 2000).

2.0 Lead Regulatory Agency

The West Virginia Department of Environmental Protection (WVDEP), Office of Water Resources, Permitting Section, manages the NPDES permitting program. Their web site is located at *www.dep.state.wv.us/wr/OWR_Website/permitting/main(high).htm*. The NPDES Permit Team is responsible for individual permitting of industrial facilities and municipal and domestic waste facilities. The General Permit Team is also responsible for permitting facilities with similar discharges, such as storm water, small sewage treatment, and water treatment facilities (WVDEP, 2000a).

3.0 State Regulations Regarding AFOs/CAFOs

Under the authority of West Virginia Code section 22-12-5c, the commissioner of the state Department of Agriculture may promulgate rules to protect the ground water of the state from contamination by fertilizers and manure. The general ground water protection rules are found under Title 61 Series 6C (Ground Water Protection). The regulations for CAFOs are found under West Virginia Code, Title 47, Series 10-13 on Special NPDES Programs. CAFOs in West Virginia are subject to the rules that regulate the disposal of dead poultry and other domestic fowl. The regulations are found under West Virginia Code, Title 61, Series 1C.

4.0 Types of Permits

NPDES

CAFOs in West Virginia are subject to the federal NPDES permit program, which is managed by the Office of Water Resources. The regulations for CAFOs are found under West Virginia Code Title 47, Series 10-13 on Special NPDES Programs.

Other

According to the Office of Water Resources, Permits Division, individual water pollution control permits will most likely be required for CAFOs. In addition, CAFOs also may be required to obtain the permits (WVDEP, 2000c):

- Storm water associated with industrial and/or construction activity permit
- Industrial solid waste landfill permit
- Disposal of sewage sludge and/or domestic sewage at publicly owned treatment works permit
- Land application of sewage sludge and/or domestic sewage permit
- Underground injection control permit (class V)
- Remediation of petroleum-contaminated site permit
- Small sewage facility permit (maximum of 50,000 gallons per day)
- Certificate of approval for construction of non-coal dams

- Dredge or fill certification

5.0 Permit Coverage

West Virginia follows the federal definition of CAFOs in section 47-10-13—Special NPDES Programs, at *www.dep.state.wv.us/wr/OWR_Website/index.htm*.

Anyone acquiring, constructing, installing, modifying, or operating a facility discharging treated or untreated sewage, industrial waste, other wastes, or effluent from these wastes into state waters must apply for an Individual Water Pollution Control Permit (WVDEP, 2000d).

6.0 Permit Conditions

The purpose of the Individual Water Pollution Control Permit is to ensure that technology-based waste treatment requirements are in place and the state's water quality standards are protected (WVDEP, 2000d).

Typical requirements of an owner/operator are:

- Submit a complete permit application that describes the wastewater treatment facility as well as the anticipated effluent discharge quality
- Submit regular reports about the quality of the effluent discharge
- Prepare a ground water protection plan for industrial facilities

Approvals

No information was found in publicly available sources.

Lagoon Design and Specifications

No information was found in publicly available sources.

Discharge Rules

No information was found in publicly available sources.

Waste Management Plans

Under the state's Department of Agriculture ground water protection rules, any person maintaining more than 1,000 animal units in a feedlot must submit a Nutrient Management Plan to the commissioner and implement the plan within 3 years of the plan's development. Any person maintaining more than 300 AUs in a feedlot in an area where potential for impairment of existing ground water quality is high must submit a NMP to the commissioner and implement it within 5 years of the plan's development. The NMP is specified in the Nutrient Management Standard Practice #590 of the Soil Conservation Service Field Technical Guide (see 61 CSR6C).

Separation Distances

No information was found in publicly available sources.

Land Application Requirements

No information was found in publicly available sources.

7.0 Enforcement Information

The Environmental Enforcement Division provides compliance assistance to the regulated community by developing and conducting training classes, publishing "how-to" manuals, and conducting preclosure inspections. The Environmental Enforcement staff works with the public by investigating citizen complaints, assisting in school programs, and providing teaching staff for various conservation-oriented activities. The Enforcement Division will utilize criminal, civil, and/or administrative enforcement when all other attempts to gain compliance have been exhausted (WVDEP, 2000b).

The commissioner of the Department of Agriculture may conduct hearings, assess civil penalties, seek injunction relief, and issue orders that will minimize contamination of ground water.

Inspection Programs

The Environmental Enforcement Division performs routine inspections, compliance sampling inspections, and ground water sampling inspections on facilities permitted by the Office of Water Resources and the Solid Waste Section of the Office of Waste Management (WVDEP, 2000b).

Number of CAFO Facilities Permitted

No NPDES permits have been issued.

Support

The Environmental Enforcement Division's 49 employees are based out of four regional and two satellite offices throughout West Virginia. Information was unavailable on the Internet regarding how many FTEs conduct routine inspections of CAFOs (WVDEP, 2000b).

8.0 Voluntary Programs

Educational programs on the use of fertilizers and manures to help farmers voluntarily prevent contamination of ground water. Farmers are encouraged to implement current best management practices (BMPs) that are recommended by the state. Voluntary programs also include training for persons who would be making recommendations to farmers about the application of manure and fertilizers. The commissioner must review voluntary as well as mandatory programs for effectiveness every 5 years and incorporate current BMPs.

The West Virginia Department of Agriculture addresses ground water protection by maintaining voluntary educational programs and providing financial incentives to persons who apply fertilizers and manure.

9.0 Additional State-Specific Information

Cooperative Extension Service

Information regarding the West Virginia University Extension Service is available at *www.wvu.edu/~exten/*.

Comprehensive Nutrient Management Plan (CNMP) Certification

West Virginia does not have a CNMP preparer certification program. West Virginia is an NPDES-authorized state; however, it has not issued any NPDES permits for CAFOs.

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